

Papahānaumokuākea Marine National Monument

Mapping of Resources

Management Issue

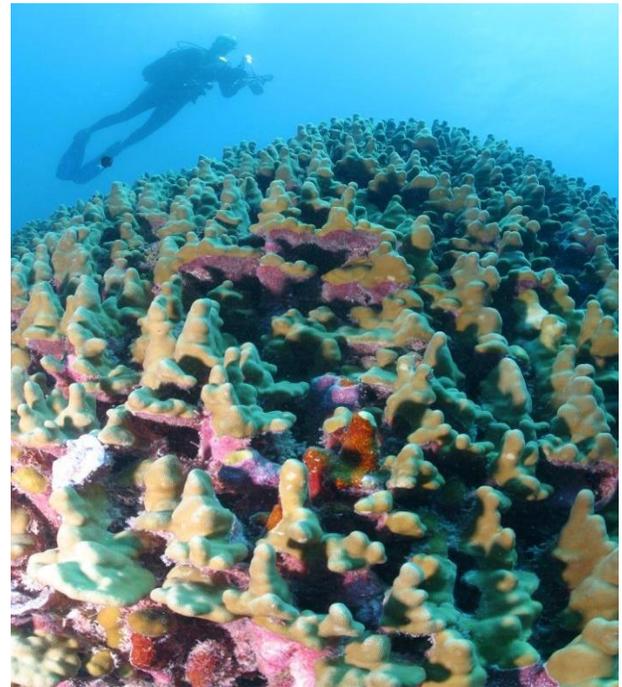
Managers require an understanding of the spatial distribution of biological, physical and cultural resources of the Papahānaumokuākea Marine National Monument (PMNM or Monument) in order to effectively target areas for management actions.

Description

In order to better manage and understand the ecosystem, it is important for managers to have access to spatially referenced information about biological resources (fish, invertebrates, benthic communities, mammals, seabirds etc.) physical characteristics (temperature, salinity, acidification, currents, chlorophyll, etc.) and cultural resources (Native Hawaiian sites, maritime heritage, etc.). Data sets have begun to be developed for many of these parameters, but additional data needs to be collected to effectively manage PMNM's resources.

Questions and Information Needs

- 1) What are the existing habitats (both shallow and deep) and what is the extent of each?
- 2) What are the physical characteristics associated with those habitats?
- 3) How are the habitats changing over time?
- 4) Where are the areas which are more sensitive to human activities?
- 5) Where are maritime heritage and Native Hawaiian cultural sites located?



*Large Porites sp. coral structure with diver, Lisianski Island.
Photo credit: James Watt*

Scientific Approach and Actions

- Collect complete bathymetry of deep and shallow water areas as well as cloud-free satellite imagery
- Collect point survey observation data for physical, biological and cultural resources
- Map, characterize and assess coral reefs and their associated habitats
- Catalogue existing datasets, document current data collection programs and assess the quality (e.g. statistical rigor) for these data
- Describe species diversity, trophic structure and associated dynamics (including habitat linkages with other ecosystem components) of ecosystems of the Monument
- Characterize critical oceanographic factors that influence the distribution and abundance of biotic components of ecosystems of the Monument
- Assess population replenishment and connectivity among islands, banks and reef ecosystems
- Improve hydrodynamic, ecosystem and resource assessment models that capture the dynamics, structure and function at appropriate temporal and spatial scales
- Develop decision support analysis tools that incorporate the complexity, dynamics and uncertainty associated with NWHI processes to assist managers in making management decisions
- Identify the distribution and occurrence of deep-water ecosystems including identification of the extent and distribution of these habitats and associated species at each island

Updated: September 2014

For More Information -- <http://www.sanctuaries.noaa.gov/science/assessment>

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Potential Key Partners and Information Sources

Hawai'i Institute of Marine Biology; NOAA/NMFS/PIFSC/Coral Reef Ecosystems Division; NOAA/NMFS/PIFSC/CRED/Pacific Benthic Habitat Mapping Program; NOAA/NMFS/Pacific Islands Fisheries Center; NOAA/NOS/National Center for Coastal Ocean Science; US Fish and Wildlife Service; US Geological Survey/Biological Resources Division; USGS/BRD/National Biological Information Infrastructure/Pacific Basin Information Node; State of Hawai'i; Native Hawaiian Cultural Practitioners; Clancy Environmental; Bernice P. Bishop Museum; National Museum of Natural History.

Management Support Products

- Data sets of benthic habitats, bathymetry, other biological data, physical and cultural data
- Data discovery tool (web based interface to access NWHI data sets)
- Public outreach interactive map tool

Planned Use of Products and Actions

- Species/habitat modeling; climate change modeling; impact analysis; decision support tools
- Management access to data in a form that is easily used and can be tailored to specific management questions
- Increased content of education and outreach products
- Interactive mapping allows greater interaction with the public and the monument without actually visiting the site

Program References

PMNM Management Plan

- Action Plan 3.1.1 Marine Conservation Science
- Strategy MCS-1: Continue and expand research, characterization and monitoring of marine ecosystems for the life of the plan.

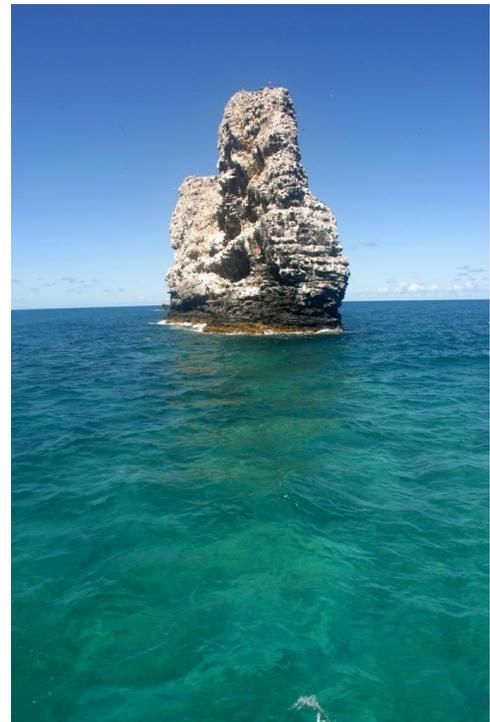
- *Other Action Plans:*
 - o 3.1.3 - Historic Resources
 - o 3.1.4 - Maritime Heritage
 - o 3.2.1 - Threatened and Endangered Species
 - o 3.2.2 - Migratory Birds
 - o 3.2.3 - Habitat Management and Conservation
 - o 3.3.2 - Alien Species
 - o 3.5.1- Agency Coordination
 - o 3.6.2- Information Management
 - o 3.6.3- Coordinated Field Operations

PMNM Condition Report

- These activities will support all questions of the PMNM Condition Report

Other Documents

- Links to Monument Goals 1, 2, 3, 4, 5 and 7



*La Perouse Pinnacle, French Frigate Shoals.
Photo credit: James Watt.*

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